Consumption of purple sweet potato leaves decreases lipid peroxidation and DNA damage in humans

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Abstract

Consumption of polyphenols is associated with reduced risk of chronic diseases, possibly via a variety of biomechanisms, including antioxidation and anti-inflammation. Purple sweet potato leaves (PSPL) commonly consumed in Asia possess polyphenols. In this study, we aim to investigate antioxidant effect of 200 g/d PSPL containing 902 mg polyphenols in a clinical trial. This randomized, crossover clinical study included 16 healthy adults (7 M, 9 F; aged 20-22 y). After a 1-wk run period, subjects were assigned randomly to receive either PSPL or low polyphenol diet (LPD) for 2 wks, followed by a 2-wk washout period before crossing over to the alternate diet. Fasting blood and 24-h urine samples were collected from each subject at day 0, 7 and 14 of each phase. Our data showed PSPL consumption enhanced urinary total phenol excretion by 24.5% at day 14 as compared to day 0, while the LPD decreased total phenol content in plasma and urine by 3.3 and 16.3%, respectively ($p \leq 0.05$). Low-density lipoprotein lag time and glutathione concentration in erythrocytes at day 14 was significantly enhanced by 15.0 and 33.3% by PSPL as compared to day 0, respectively, while their values were not altered by the LPD. Urinary 8-hydoxy-deoxyguanosine (8-OHdG) excretion decreased significantly by PSPL consumptoin by 36.7% at day 7 as compared to day 0, yet unchanged by the LPD ($p \leq 0.05$). In conclusion, our results suggest that polyphenols in 200 g PSPL were bio-available and could enhance antioxidant defense and decrease oxidative stress in young healthy people.